



# Integrated Permitting and CSOs

Michele Mateo Putnam,  
Director  
Division of Water Quality  
NJDEP

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# A New Permitting Strategy for Combined Sewer Overflows



# Combined Sewer Overflows

- Combined Sewer Systems (CSSs) are designed to carry wastewater and stormwater in a single pipe to a treatment plant
- During periods of rainfall or snowmelt, CSSs overflow to surface water bodies.....CSOs
- EPA National CSO Control Policy in 1994

# NJ's History

- First Master CSO GP issued in 1995; Renewed in 2000/Re-issued in 2004; Expired 2009
- Focus on Solids/Floatables Controls;
  - 89% of facilities across the State have installed controls
  - Controls remove more than 700 tons of solids and floatable materials per year
- DEP has helped fund more than \$1.4 billion in CSO abatement projects
- 2007 engineering analyses estimate cost of sewer separation \$6.5 Billion
- 2012 Decision to move forward with individual permits

# Summary

- 218 individual CSO outfalls (64 eliminated)
- 21 different municipalities/11 watersheds
- 9 NJPDES wastewater treatment plants
- Permits will be issued in groups
- DEP will work with the permittees and communities
- 1st 'set' of Individual CSO permits was issued on April 12, 2013

# Permit Requirements

## Nine Minimum Control Measures/ Integrated Permitting

- 1. Enhanced operation and maintenance**
  - **Asset Management and Emergency Response** planning, **Infiltration and Inflow reduction**, inspections
2. Maximum use of collection system for storage
- 3. Review of pretreatment requirements**
  - **Identify location of SIUs in relation to CSO and prioritize environmental impact**
4. Maximization of flow to POTW for treatment
5. Prohibition of CSOs during dry weather

# NMCs and Integrated Permitting (cont'd)

6. Control of solids and floatables

## **7. Pollution prevention**

- **Stormwater controls (e.g. street cleaning, public education, extend MS4)**

## **8. Public Notification**

- **Enhanced: signs at outfalls, leaflets, and websites or hotline**

9. Monitoring of CSO impacts and efficacy of controls- update

# Long Term Control Plan

## 3 Steps

1. System Characterization, Public participation and Prioritization of Sensitive Areas – 1 year
2. Development and Evaluation of Alternatives - 2 years
3. Final selection and Implementation Schedule and Monitoring Program – 3 years (possibly more if you work together)

# Long Term Control Plans

- Step 1
  - Characterization, monitoring and modeling (update/baseline)
  - Public participation (update)
  - Consideration of sensitive areas-prohibit increased CSOs and eliminate/relocate/treat

# LTCP

## Step 2

- Evaluation of a combination of CSO control approaches and alternatives, including the following, ***at a minimum***
- ***Green infrastructure***
  - Integrated with grey to achieve improved water quality
  - Environmental, Social and Economic Benefits
  - Working with various entities (businesses, municipal, homeowners)



# GREEN INFRASTRUCTURE in New Jersey



## Green Stormwater Practices

[Rain Gardens/  
Bioretention Basins](#)

[Cisterns](#)

[Grass Swales](#)

[Green Roofs](#)

[Pervious Pavement](#)

[Street Tree Trench](#)

[Rain Barrels](#)

[Riparian Buffers](#)

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Rain Garden

Homeowners can incorporate green infrastructure in several ways. Rain barrels can be placed under a roof drain to collect rooftop runoff. The rain water is then used to water the plants or wash the car. Rain Gardens are excavated garden areas that collect and infiltrate water. Rooftop runoff can also be directed to them so they are watered naturally every time it rains. Disconnection of impervious surfaces, such as rooftops, is another way to reduce runoff. It allows downspouts to drain into the lawn or another vegetated area instead of directly to the storm drains. Crossing vegetated area allows the runoff the opportunity for infiltration before entering the storm sewer system.

### Useful Links

- [Garden State Greenways](#)
- [NJ Tree Foundation](#)
- [Rutgers Introduction to Green Infrastructure Practices](#)
- [NJ Water Savers](#)
- [ASLA](#)
- [Riparian Basin Rain Barrel Rebate Program](#)

## Financial Assistance



# GREEN INFRASTRUCTURE in New Jersey



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Green Roof - Hopewell Township, Mercer County

Green Infrastructure can benefit businesses as well as the environment. Runoff occurs when there is more precipitation than the soil and vegetation can absorb. Water on parking areas can freeze and cause hazards to customers in parking lots. Permeable pavement can be used in parking lots instead of regular pavement because it is porous and will inhibit ponding and freezing. Cisterns or Rain barrels can also be used to collect rain water from the gutter for irrigation. Rain gardens can also collect and store water

from rooftop runoff, providing improved aesthetics as well as enhanced environmental benefits. Green roofs intercept some rainfall to prevent it becoming runoff, reducing the flow to the existing storm sewer system.

### Useful Links

- [Bantam Basin Rain Barrel Rebate Program](#)
- [NJ Tree Foundation](#)
- [NJ Water Savers](#)
- [EPA Green Infrastructure](#)
- [EPA Green Funding Opportunities](#)
- [ASLA](#)

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Some types of green infrastructure projects can provide not only an environmental benefit to a school or community center, but also serve as an interactive learning opportunity.

Rain gardens can be installed with assistance from students and members of the community in both the planning and the construction phases. The use of rain gardens can assist educators in teaching how to maintain a portion of the water cycle. Rain gardens can provide habitat to many insects, butterflies, and wildlife that can be part of the curriculum as well.

Rain barrels or cisterns are another simple project option, particularly where the soils make the installation of a rain garden challenging. Students can participate through painting a rain barrel, or by using the water captured in a rain barrel or cistern to reduce potable water use for watering lawns and gardens.



Our [Watershed Ambassador Program](#) offers free environmental educational presentations on various water topics throughout New Jersey. Interested parties can contact the ambassadors at [http://www.nj.gov/dep/wms/bear/amer corps\\_contact\\_info.htm](http://www.nj.gov/dep/wms/bear/amer corps_contact_info.htm).

The New Jersey [Project WET!](#) (Water Education for Teachers) Program also provides educational resources.

### Watershed Ambassador Projects

- [Rain Barrel, Delanco](#)
- [Rain Barrel, Hopewell](#)
- [Rain Barrel, Tuckerton](#)
- [Rain Barrel, Millville](#)

### Useful Links

- [Rutgers Introduction to Green Infrastructure Practices](#)
- [Rutgers Cooperative Extension](#)
- [NJ Water Savers](#)
- [Center for Green Infrastructure Design](#)



## PRACTICES

### GREEN INFRASTRUCTURE PRACTICE: RAIN GARDEN/BIORETENTION BASIN

Rain gardens are landscaped, shallow depressions that capture rainwater and allow it to percolate slowly into the ground. Large rain gardens are called bioretention basins.

#### HOW IT WORKS:

Stormwater flows into the rain garden where it is temporarily stored. The plants in the rain garden take up some of this rainwater, and the rest infiltrates the soil. Rain gardens are generally planted with more deeply rooted grasses and flowers than a traditional lawn, so water is able to drain more deeply into the soil, maximizing infiltration and groundwater recharge. Also, because runoff is collected in the rain garden instead of flowing directly into a storm drain, it has a chance to interact with the plants and soil, where pollutants can be broken down and filtered.

#### CONSIDERATIONS:

Rain gardens are best placed between two impervious surfaces, like between a downspout draining a roof and a sidewalk, so it can slow down and intercept runoff. Because infiltration of rainwater into the soil is one of the major purposes of rain gardens, it is important to make sure the soil in your rain garden is sandy enough. If it is not, it is important to add coarse sand to the soil to increase the amount of water that can be penetrated into the soil. Finally, it is best to choose native plants; native plants are accustomed to New Jersey's climate, so they are less likely to need fertilizer to thrive.

Additional information regarding the rain garden/bioretention design is available at [www.njfwater.org/img\\_manual2.htm](http://www.njfwater.org/img_manual2.htm).



# Financing Green:

- State Revolving Fund/NJEIT
  - Priority ranking for CSOs
  - Incentivize Green Infrastructure
    - 2014 IUP: **principal forgiveness** for green in CSO areas
- Coordinate with other state funding programs (319)



# NJ Environmental Infrastructure Financing Program

## Contacts:

- Steve Betz, Bureau Chief  
Bureau of Environmental and Engineering, 609-633-1170
- Gautam Patel, Bureau Chief  
Bureau of Construction and TWA Permitting, 609-633-1180
- Scott Shymon, Chief  
Policy & Program Development Section  
609-292-3114
- [www.nj.gov/dep/dwq/mface\\_njeifp.htm](http://www.nj.gov/dep/dwq/mface_njeifp.htm)
- [www.njeit.org](http://www.njeit.org)



# LTCP (cont'd)

- Increased Collection System Storage, Sewer Separation, End of Pipe Treatment, POTW Expansion, I/I Reduction, Limited Bypass
- Cost/performance considerations
- Operational Plan
- Maximization of treatment at the POTW
- Implementation schedule may be phased and shall consider....discharges to sensitive areas as highest priority, permittees financial capability, user fees and rates, available funding and asset management
- Post construction monitoring to demonstrate compliance with Water Quality Standards

# Results

- Coordinated permit requirements: surface water, pre-treatment and stormwater
- Advancing Green Infrastructure
- Acknowledging fiscal constraints
- Emphasizing the importance of O&M, Asset Management and Emergency Planning
- Relying on collaborative efforts of regulated entities, communities and DEP groups
- Incremental, integrated improvements to Water Quality



# New York City

Julie Stein, NYCDEP  
Director, Office of Wet  
Weather Planning and  
Water Quality Policy

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